

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
3 March 2005 (03.03.2005)

PCT

(10) International Publication Number  
**WO 2005/020564 A1**

(51) International Patent Classification<sup>7</sup>: **H04N 5/00**

[US/US]; 8276 Rewelwood Place, Maple Grove, MN 55311 (US).

(21) International Application Number:  
PCT/US2004/001573

(74) Agents: **TRIPOLI, Joseph, S. et al.**; 2 Independence Way, Princeton, New Jersey 08540 (US).

(22) International Filing Date: 20 January 2004 (20.01.2004)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/494,835 13 August 2003 (13.08.2003) US

(71) Applicant (for all designated States except US): **THOMSON LICENSING S.A.** [FR/FR]; 46, Quai A. LeGallo, Boulogne Cedex 92648 (FR).

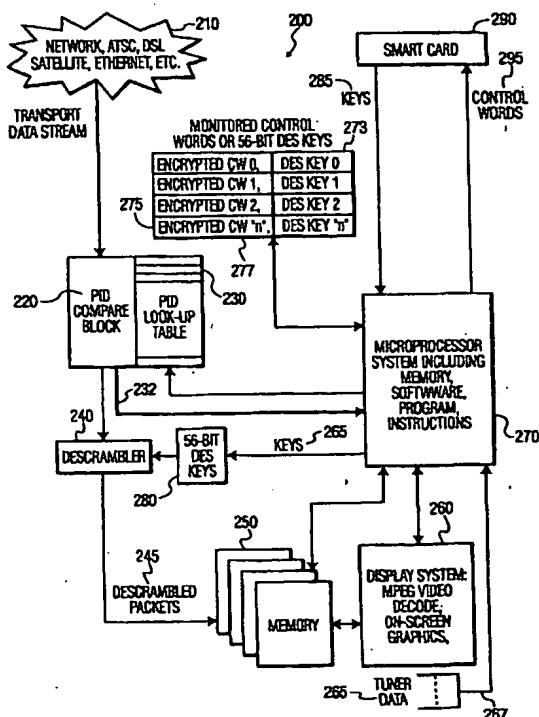
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,

(72) Inventor; and

(75) Inventor/Applicant (for US only): **GRIMES, Kevin**

[Continued on next page]

(54) Title: PRE-PROCESSING OF DESCRAMBLING DATA TO REDUCE CHANNEL-CHANGE TIME



(57) Abstract: This invention discloses an apparatus and a method for receiving a plurality of encrypted digital video, audio and data that require an encryption key to decode before utilizing. Specifically the invention is directed toward devices such as cable and digital broadcast satellite systems that transmit multiple channel information to receivers that provide users access to the multiple channels upon particular channel selection. Such channel selection requires decrypting and formatting a new data stream through a time consuming electronic process. The invention described herein reduces channel change time, by monitoring de-scrambled data in the background, prior to a user selecting a new channel. Digital broadcast data contain input de-scrambling control words required for the decoding of N-bit de-scrambling keys for each of a multiplicity of digital data streams available. Storing the data control words or the N-bit descramble keys reduces subsequent retrieval decoding time. However, utilizing the control words to descramble the N-bit de-scrambling keys and then storing the N-bit de-scrambling keys, typically yields the greatest gain in reducing channel change time.